(No Model.)

L. F. JOHNSON.

LIGHT INDICATOR.

No. 527,608. Patented Oct. 16, 1894.

Fig. 1.

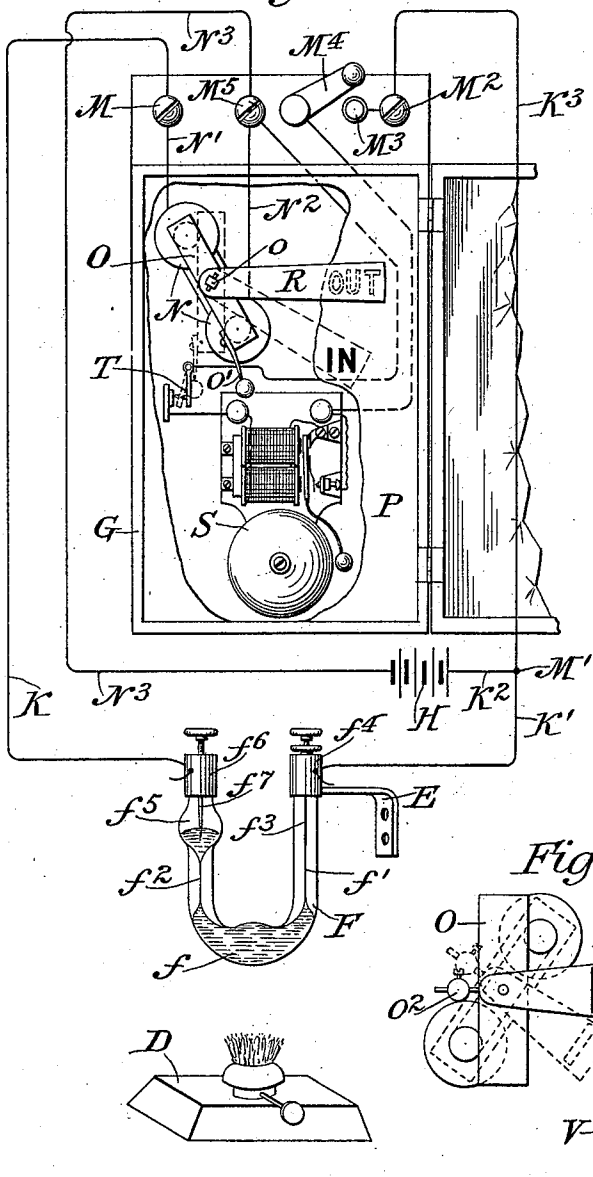


Fig. 2.

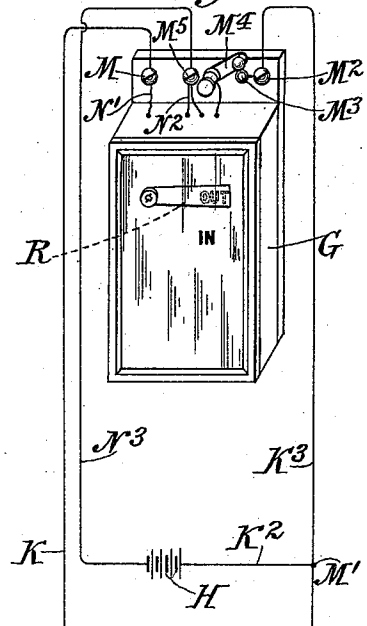


Fig. 3.

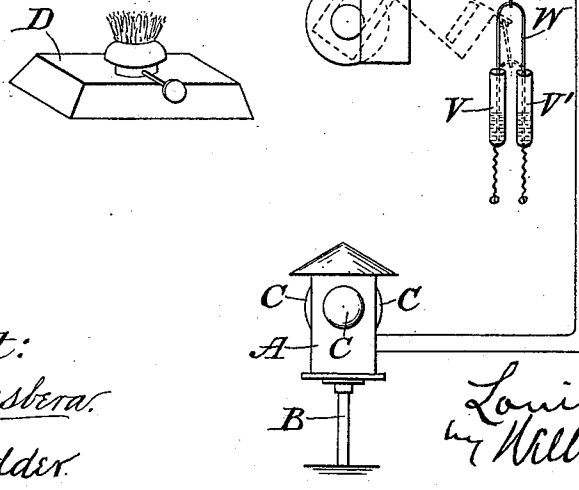
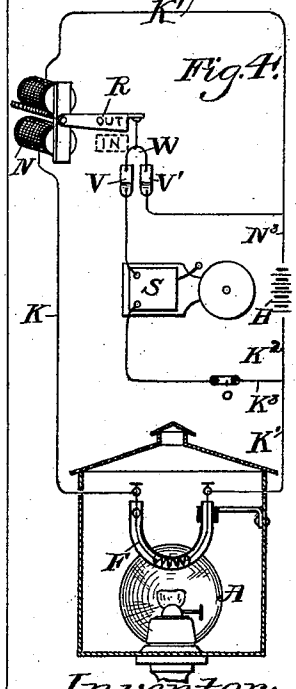


Fig. 4.



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UNITED STATES PATENT OFFICE.

LOUIS F. JOHNSON, OF POUGHKEEPSIE, NEW YORK.

LIGHT-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 527,608, dated October 16, 1894.

Application filed April 7, 1894. Serial No. 506,760. (No model.)

To all whom it may concern:

Be it known that I, LOUIS F. JOHNSON, of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Light-Indicators; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

Various so-called thermostatic devices, wherein a change of temperature is caused to open or to close an electric circuit, have been used heretofore for different specific purposes.

My present invention relates in general to devices of this kind and its special object is to provide improved means whereby the condition of a railway switch or signal lamp may be reliably indicated at the signal tower.

The invention consists in the combination and arrangement of parts hereinafter described whereby a circuit which is normally closed is broken by the extinguishment of a light and at the same time another path is offered for the current. Under this arrangement the breaking of the circuit either by the extinguishment of the light or from any other cause is made to give both a visual and an audible alarm, whereby the possibility of accidents is reduced to a minimum.

In the accompanying drawings: Figure 1 is a view showing in elevation the indicator mechanism which is placed in the signal tower, the electric connections and the switch lamp and circuit closing device controlled thereby, the door of the casing about the indicator devices being represented as open and broken away, and the front plate of the casing within the door being also represented as partly broken away to show the devices behind it. Fig. 2 is a view showing the indicator in perspective and the switch or signal lamp in elevation with the electric connections between them. Fig. 3 is a detail view showing the preferred form of circuit closer. Fig. 4 is a view representing the circuits clearly.

The usual switch or signal lantern is represented at A as mounted upon a standard B and as having the usual plain or colored glasses C, C, which are illumined by the lamp D within the lantern.

In the upper portion of the lantern is fixed a bracket E which supports at the proper distance above the lamp D a circuit closing device which consists of a U-shaped tube F.

In the bend of the tube is formed a bulb f to receive a suitable quantity of mercury, while the two legs of the tube have bores f' and f^2 of small diameter. Within the bore f' is fixed a terminal, indicated at f^3, which is of such a length as to be always in contact with the mercury while its upper end is suitably connected to an ordinary binding-post f^4. The other leg of the tube F is formed with a small bulb f^5 above the narrow bore f^2 so that the mercury may have opportunity to expand without danger of bursting the tube after it has risen to that height in the bore f^2 at which it stands normally when the lamp D is burning.

In the binding-post f^6 is supported a terminal f^7 which is adjustable therein, as indicated, so that its extremity may be set higher or lower as desired.

Within the signal tower or at any other desired point is placed a box or casing G which incloses the indicating devices, together with the battery H.

The binding-post f^6 of the thermostat F is connected electrically by a suitable conductor K to a binding-post M on the casing G, while the other binding-post f^4 of the thermostat F is connected by a conductor K′ with a common point M′ from which connection is made by a conductor K^2 to the battery and by a conductor K^3 to a post M^2 on the casing G, the latter being connected to the point M^3 of a switch M^4.

Within the casing is fixed a magnet N which is connected on one side by a conductor N′ to the binding-post M and thence to the battery through the thermostat F and on the other side by a conductor N^2 to a binding-post M^5 and thence by a conductor N^3 to the other side of the battery. The armature O of the magnet N is preferably adapted to swing on an axis parallel with the axis of the magnet, being fixed to a spindle o which projects through the front plate P of the casing and bears upon its outer end a visual signal R. A normally open shunt, including a bell S of ordinary construction, and having a normally open circuit closer, extends from the switch

M^4 to the binding-post M^5 and the movement of the armature O of the magnet N is adapted, when the armature is released, to close the shunt at T.

As represented in Fig. 1 the circuit closer T is of ordinary construction and is actuated by a finger o' which is carried by the armature O. The arrangement shown in Fig. 3 is preferred, however, because of its greater certainty in operation although the armature is less heavily loaded. In this arrangement the terminals of the shunt are connected respectively to mercury cups V and V', and a light wire bridge W is suspended by a link w from the end of the semaphore or signal arm R. As it is only necessary that the bridge W should descend in order to close the shunt, no pressure being required, the movement of the armature may be made still more easy by adding an adjustable counterpoise o^2.

The operation of the devices above described will now be understood. So long as the lamp D is burning properly the mercury in the thermostat F will make contact between the terminals f^3 and f^7 and will therefore keep the circuit closed through the magnet N, thereby holding the signal arm R in the position shown, in which it indicates that the lamp is burning. Should the lamp go out or burn dimly the mercury in the thermostat F will contract sufficiently to break the circuit between the terminals f^3 and f^7. The armature O of the magnet N will then be released, allowing the signal arm R to move to the position shown by dotted lines in Fig. 1 in which it will indicate that the lamp is out. As the armature moves, the shunt through the bell will be closed and the bell will then ring continuously until the shunt is broken by the opening of the switch M^4.

It is obvious that the indicator will show trouble whether the lamp be entirely out, or burning low or should the circuit be broken in any way, and that as soon as the trouble has been removed, whatever its nature, the indicator will at once show that fact.

I claim as my invention—

1. The combination with a switch lamp, a thermostatic circuit controller supported in proximity thereto, a battery and a magnet in electrical connection with said circuit controller, of a signal arm carried by the armature of said magnet, a normally open shunt around said circuit closer and magnet adapted to be closed by the release of said armature, and an audible signal included in said shunt, substantially as shown and described.

2. The combination with a switch lamp and thermostatic circuit controller supported in proximity thereto with a battery and magnet in connection therewith, of an armature for said magnet mounted to swing on an axis parallel with the axis of said magnet, a signal arm carried by said armature, a normally open shunt around said circuit controller and magnet, an audible signal included in said shunt, and a circuit closer in said shunt adapted to be actuated by the release of said armature, substantially as shown and described.

3. The combination with a switch lamp, a thermostatic circuit controller F and a battery H and magnet N in connection with said circuit controller, of an armature O mounted on a spindle o, an arm fixed to said spindle, a shunt around said circuit controller and magnet, mercury cups at the terminals of said shunt, a bridge carried by said signal arm and adapted to descend into said cups, and a bell S in said shunt, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS F. JOHNSON.

Witnesses:
A. N. JESBERA,
A. WIDDER.